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REPORT OF THE WORKING GROUP ON ORGANIZATION, CONTENT AND METHODOLOGY OF HOUSEHOLD SURVEYS (with special emphasis on data processing) FOR ENGLISH-SPEAKING AFRICAN COUNTRIES

ADDIS ABABA, 16-20 NOVEMBER 1987

REPORT OF THE WORKING GROUP

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A. ATTENDANCE AND ORGANIZATION OF WORK

1. The Working Group on Organization, Content and Methodology of Household Surveys for English-speaking African countries, with special emphasis on data processing, was held at ECA headquarters, Addis Ababa, from 16-20 November 1987. The meeting was opened by the Deputy Executive Secretary of the Economic Commission for Africa.

2. The Working Group was attended by ten experts from the following countries: Botswana, Egypt, Ethiopia, Lesotho, Nigeria, Zambia and Zimbabwe. The list of participants is attached as Annex I to this report.

3. In view of the practical work to be done on micro-computers, the participants agreed not to elect a bureau. This facilitated to a large extent the organization of work since the participants could at any time interrupt the secretariat to ask questions or make comments.

B. AGENDA

4. The Working Group adopted the following agenda:

1. Opening address
2. Adoption of the agenda
3. African Household Survey Capability Programme (AHSCP): Selected Issues
4. Management and planning of surveys, with special reference to data processing
5. Assessment of hardware and software for survey processing
6. Data entry and data editing
7. Development of a statistical data base
8. Production of reports
9. Evaluation of the Working Group
10. Other business

5. The timetable of the meeting is attached as Annex II to this report.

C. ACCOUNT OF PROCEEDINGS

Opening address

6. In his opening statement, the Deputy Executive Secretary recalled that the present Working Group for English-speaking African countries was the sixth technical meeting organized by ECA on the subject of household surveys in the 80s and that the last one was held in Addis Ababa the week before for the French-speaking group.

7. He then drew the attention of the participants to the important role played by the African Household Survey Capability Programme (AHSCP) in providing data for monitoring the Lagos Plan of Action and the Final Act of Lagos, Africa's Priority Programme for Economic Recovery and the United Nations Programme of Action for African Economic Recovery and Development, 1986-1990 (UN-PAAERD), particularly in the light of the current world economic crisis which especially affects the African region. The Deputy Executive Secretary indicated that these new developments had created the need for a wider range, more reliable and timely statistical data than ever before. He pointed out that it was necessary to have comprehensive statistical information on all basic socio-economic concerns in order to achieve effective development planning and evaluate the impact of development efforts.

8. The Deputy Executive Secretary said that special emphasis had been put on data processing in the present meeting, like the previous one for the French-speaking group, in view of the problems encountered by a number of countries of the region at this stage of the conduct of household surveys. He noted that a number of African national statistical services had acquired their own computer equipment, especially with the spectacular change in recent years with the introduction of powerful micro-computers or personal computers and the availability of a great number of new software packages. He observed that this evolution implied a major modification in the former techniques applied in the use of computers.

9. The Deputy Executive Secretary urged the participants to find ways and means of solving, during their deliberations, the survey data processing problems which had been identified in the background documents submitted to them. These include the absence of a well-designed planning process required in applying new technologies, the lack of computer equipment within

10. Finally, the Deputy Executive Secretary expressed his deep appreciation to the Government of the Federal Republic of Germany which made the organization of the working group possible.

African Household Survey Capability Programme (AHSCP): Selected Issues (Agenda item 3)

11. The secretariat introduced this item on the basis of document ECA/STAT/WGHS/87/1. It was stated that 20 African countries currently participate in the programme but, due to financial problems, only 13 countries are engaged in active survey operations. Even for the latter, the financing of all the planned surveys had not yet been secured in some cases. The secretariat therefore urged the national statistical services (NSS) of the region to use all the opportunities which may arise to try to obtain the financing of their survey programmes.

12. The secretariat also drew the attention of the participants to some other important issues relating to the implementation of these survey programmes within the framework of AHSCP, particularly as regards the lack of qualified personnel in survey organization, sampling, data processing and analysis and the bottleneck existing at the data processing stage in a number of African countries. It was emphasised that particular attention should be given to training of staff and to solving the survey data processing problems which had been identified during the ECA preliminary inquiry on this matter, including lack of disk space, inadequate number of data entry stations and printers, low priority given to statistical work by external computer centres, and some misunderstanding between statisticians and data processing (DP) personnel.

13. In the discussions which followed, the participants recognized that there was a problem of financing household surveys programmes in many African countries. However, some of them felt that this problem was not as acute as it would seem. It was noted that in most of the participating countries, the Government allocated funds for surveys, although this was often inadequate. The participants also pointed out that there were cases where the available resources had not been efficiently used. It was suggested that the management of national statistical services (NSS) should be improved in order to rationalize the use of the limited resources available.

14. The participants were of the view that the assistance of donor agencies was required in the implementation of survey programmes. However, a number of participants observed that some donor agencies were willing to finance only surveys in which they were interested. Also assistance was at times provided in an unco-ordinated manner.

15. The participants considered that the use of long-term internationl experts in household surveys programmes might still be required for some time. A number of participants pointed out that the counterpart staff should be clearly identified before such experts were recruited. Some participants stated that their countries did not gain much from the use of resident experts because the latter first had to learn about the local environment and conditions, which took one year or so, then had to leave on the expiration of their two years contracts.

16. Most of the participants felt that African countries tended to benefit more from the use of short-term experts/consultants which allowed the national staff to take the full responsibility of their survey operations with the necessary guidance. This approach was also cheaper. However, other participants observed that the short period of visit of consultants did not always enable the counterpart staff to gain much benefit from such assistance.

17. A number of participants reaffirmed that statistical work was given a low priority by government computer centres outside the NSS. Some participants however pointed out that this was sometimes the fault of the statistical services concerned which failed to put liaison staff at the data processing centres. NSS should have their own data processing units to enable them to process timely their survey data. Other participants indicated that a low priority was also given to processing of survey data by some data processing units within national statistical services. A suggestion was made that the various sections within the NSS could be equipped with micro-computers in order to contribute to solving such a problem.

18. The participants agreed that survey managers and data processing (DP) staff should work closely together. It was stated that the DP staff sometimes considered themselves as belonging to a separate line. On the other hand, it was also argued that there was often a lack of understanding of DP procedures by statisticians. The meeting was of the opinion that statisticians should have basic training in data processing in order to bridge the gap on this issue and that DP staff should be involved at an early stage in the survey design and planning.

19. The meeting stressed the lack of trained manpower in the field of data processing and recommended that a long term training plan should be adopted in order to solve this problem. The difficulties of identifying suitable candidates to be

trained, funding training and retaining trained personnel were raised. It was suggested that such issues should receive due attention at the national level, taking into account the local conditions. In one country, for example, a committee was set up to find out why the trained staff tended to resign.

20. In concluding the discussions on this agenda item, the meeting was of the view that there should be a government policy regarding computer technology. To this end, an authority vested with the control and the use of information technology should be established. This will also help to solve a number of problems relating to compatibility of computer equipment and maintenance services.

Management and planning of households surveys, with special emphasis on data processing (Agenda item 4)

21. The secretariat introduced the discussion paper and emphasised the need for careful planning and management of the data processing aspects of household survey operations. Careful management was particularly required in an environment of limited resources in order to ensure the most efficient use was made of these resources.

22. The paper suggested that data processing problems would be minimised and more timely results produced if the data processing aspects of the survey were planned in advance of the data collection phase. It was agreed that data processing personnel should be involved in the very early stages of questionnaire design.

23. Various aspects of data processing were commented upon in the paper, for example on the extent to which coding would be carried out in the field or in the office, and the effect that these processing design decisions would affect questionnaire design, resource allocation, etc.

24. The secretariat then illustrated this with a simple example of a critical path analysis and mentioned that software packages were available to assist in this regard. Even without computerisation, some form of activity chart and task planning should be considered essential in project planning.

25. In the discussion on the paper, the participants pointed out that the plans prepared for a survey may occassionally be disrupted by external factors (for example, limited foreign exchange may prevent an essential computer part from being

received on schedule). In response, it was stated that some allowance should be made for contingencies in project planning, but that clearly not every eventuality can be foreseen. Nevertheless, a carefully planned project is less likely to experience slippages than a project which is not so well planned.

26. The suggestion was also made that it would be better to delay data collection if prior investigations showed that a delay was expected in a particular critical task.

27. The participants discussed the centralisation of data entry points versus decentralised systems, and recognised the advantages and disadvantages of each method. They also discussed the use of open ended questions in questionnaire design and the effect of such questions on coding.

28. It was agreed that some balance must be made between pre-coded and other questionnaires. Some pre-coded questionnaires are too large for efficient data collection. In addition, the experience in some countries was that interviewers forced responses to fit the available printed codes. Careful attention needs to be given to this matter in training and when assessing the extent to which pre-coding would be used.

29. Similarly, some balance was also required between office and field coding, and that this would depend on the survey, the extent of interviewer training, and the complexity of the classification.

30. The delegate from Lesotho mentioned the planned use of German made hand-held computers for data colletion in his country. These machines will be programmed to skip to the next logical question, when the interviewer entered the coded response to a sequencial question.

31. The discussion on this paper concluded with comments on the need to transcribe data. It was agreed that data transcription should be minimised. It appeared that one country has been transcribing data onto code sheets only in respect of previous surveys which were not designed for computerised processing. More recent surveys in that country have been more appropriately designed and data transcription will not be required. Other countries represented at the meeting were not currently transcribing household survey data to coding sheets.

Assessment of hardware and software for survey processing
(Agenda item 5)

32. The secretariat introduced this agenda item on the basis of document ECA/STAT/WGHS/87/3. The document focused on the use of micro-computers, otherwise called PC, which now constitute powerful tools for responding to all the specific needs connected with the survey data processing from questionnaire design to tabulation. It was pointed out that a number of standard software packages operational on the PCs are designed to carry out data entry, data editing and tabulation operations, as well as project analysis and management.

33. The impressive features of PCs include their ability to generate graphics displays, to develop data bases, to provide data handling capabilities for statistical computing, to support word processing and to generate electronic spread sheets. In this connection, the secretariat reviewed and identified the relevant software packages which could be used for the above mentioned purposes.

34. A description of functional components, adapters and peripherals of a PC was made and the genealogy of various types of micro processors given. It was indicated that a PC should be selected on the basis of its intended use. Account should be taken of the possibilities offered for connecting appropriate peripherals. Compatibility, where necessary, with already available equipment should be taken into consideration.

35. Different modes of PCs connections were further explained to the participants. A PC can emulate local or distant screens through adequate means of communications; it can be an alternate console or serially mixed with other workstations. A PC local network can be set up to increase the quantity and the nature of tasks to be accomplished. Through local connection, links between several PCs can be ensured for exchange of information.

36. Some guide configurations were suggested to the participants for various use of PCs such as data entry, an intelligent workstation, data processing and statistical analysis. A mixture of convenient printers may be selected to which the PCs would be linked through adequate means of communications.

37. Finally the secretariat stressed that despite the so called user friendly abilities of the PCs, the training aspect should not be neglected. Indeed it was not enough to give technical training for handling the available equipment, but a comprehensive initiation in micro-computer technology and handling of software was necessary.

38. The discussions on this item referred mainly to:

- the difficulties in selecting appropriate equipment given the large number of dealers
- the problems of maintenance of the PCs since most vendors do not provide for it
- the questions about compatibility of the various equipment

39. It was suggested that the decision to buy a PC and the choice of hardware and software should be guided by persons knowledgeable about the technology. The tasks to be accomplished and the software needs should be fully identified. It was indicated that many problems could be avoided by buying the hardware and software from the same source.

40. The RODE/PC data entry programme written for the Swaziland census was then presented. The participants noted that RODE/PC is a powerful and comprehensive data entry software package. It provides all the capabilities required for input validation, conditional processing and output reformatting. Its menu-driven interface and help functions make it easy to use.

41. Among many facilities are the enter, verify function, and update functions as well as screen layout design, production of the operator statistics and scrolling within a batch.

42. Further explanations were given to the participants on the performance of the software using stand-alone or networked PCs. Unfortunately, the software was not available for the meeting and a live demonstration could not be made.

Data entry and data editing (Agenda item 6)

43. The secretariat presented the document ECA/STAT/WGHS/87/4 concerning the field of data entry and data editing. Special emphasis was given to the data entry and data editing facilities on micro-computer systems since the latter are increasingly used for survey processing in African national statistical services.

44. The advantages of using micro-computers for data entry included low cost of the equipment and existence of standardized software for data entry and data editing.

45. It was pointed out that the main constraint for the efficient use of micro-computers, at least as far as large scale surveys are concerned, is sometimes the insufficient number of micro-computers available in African statistical services.

46. The document described the three major ways of using software for data entry, namely:

- own written software, using a computer language;
- using data base systems; and
- using specialised data entry software

47. In the case of own written data entry software, guidelines for the programming and testing process were outlined in the document. It was recommended to make sure that not too much time be wasted in writing sophisticated programs which are used only once for a single survey.

48. Most data base systems provide the users with a more or less easy way to enter data as they are offering in-built programming languages. With these tools, data entry menus can be created and some basic data checks, like range checks, can be performed during the data entry phase.

49. An example of this type of data entry was presented using the well known data base system for micro-computers, dBASE III plus.

50. In the field of specialized data entry software, the tests conducted by the International Statistical Programs Center (ISPC) of the U.S. Bureau of Census were discussed. These tests covered the programs Entry Manager, Entrypoint, Rode/PC and SIDES PC. Guidelines for the purchase of specialized data entry programs were given based on the findings of the ISPC. The comparative tables showing the capabilities (and weaknesses) of the tested programs, prepared by the ISPC, were attached to the background document for further consideration in the participating countries.

51. The document indicates that versions of the most widely used data editing computer packages, before only accessible on mini-computers or mainframes, are also now available for micro-computers. Among them are the most widely used packages UNEDIT (from UN Statistical Office) and CONCOR (from U.S. Bureau of Census).

52. Some methods of computer editing, namely the "hot" and "cold" deck techniques were discussed. As an example of this type of data editing programs, the CONCOR version 2.4 was presented in more detail. The following were mentioned as the main capabilities:

- structure checks,
- range checks,
- consistency checks,
- automatic correction,
- "error-free" output files, and
- error reports.

53. Finally the structure of the CONCOR system was shown. An example of a CONCOR program (the benchmark tests which come along with the package) and the relevant output were attached to the background document.

54. The document concluded that the use of micro-computers using data base software or specialized data entry programs in connection with data editing software like CONCOR or UNEDIT might suit most requirements of statistical offices in Africa to fulfil the data entry and editing tasks for survey processing.

55. The discussions which followed showed that only three participating countries used micro-computers for data entry, using mainly dBASE as the data entry program (only one participating country used the program Entrypoint, recommended by the ISPC). The remaining participating countries used either mini-computers, mainframes or specialized data entry workstations using the respective operating system facilities. All participating countries but one used own written software for data editing. The remaining country used a mix of CONCOR, UNEDIT and own written programs for data editing.

56. During the practical exercises which followed, the participants were shown the use of the dBASE III plus system to create data entry menus and, without a major DP background, a data entry program using dBASE III plus' programming language. The participants pointed out that the use of such facilities might speed up the data entry programming process considerably in their respective countries.

Development of statistical data base (Agenda item 7)

57. The secretariat presented the paper "Development of a Statistical Data Base", ECA/STAT/WGHS/87/5. It was stated that a statistical data base was different from other data bases as regards the objectives of the data base, its content and processing requirements. The different data files, their structure and access methods were discussed. The general concept of a data base and the main criteria a data base should fulfil were presented. It was explained that there were three different types of data bases, namely hierarchical, network and relational. It was stated that there was no perfect type of data base for all applications. In creating a data base, it was necessary to take into account the non-redundancy, consistency, integration and independence of data. The data base should allow all users to have shared access and also should have a proper system of security and privacy of data.

58. The ECA Statistical Data Base was also presented. It was stated that this statistical data base was an information system where statistical data were compiled, processed and disseminated. It is organized in three levels of data bases integrated into one system of information. The level I data base is a country profile. The level II data base contains the bulk of detailed statistical data. The level III data base contains selected time series data covering the years 1965 to 1990. It contains data on national accounts, trade, population, health, education, labour, industry, agriculture, finance, price, transport and communication and vital statistics. The data included are those which are frequently sought by researchers. The structure of the data base and the different programmes used were also discussed.

59. The development of a statistical data base on micro-computer was also discussed. It was noted that a statistical base might be very big in size and might not fit into micro-computers. However, the number of stored data at a national statistical office might be much less. Moreover all the data might not be required at the same time. As the micro-computer allows for menu driven user guidance, the construction of a subject related data base file was fully transparent to the user. This approach enabled data base managers to load only the part of the data base which was actually needed.

60. It was explained that the planning and conceptual phase for micro-computer data base followed the same guidelines as for the mainframes and mini-computers. All the steps required for the creation of statistical data base and the capabilities of the d/BASE III plus data base management system for micro-computers were presented.

61. The participants shared their experiences and problems at their national statistical services. The problem of retaining trained personnel and in general shortage of staff was discussed. It was also mentioned that there was a problem of co-ordination of work between DP personnel and statisticians. Questionnaires were designed by the statisticians without consulting the DP experts. This had led to various problems when processing the data using computers. It was stated that micro-computers could help in solving some of these problems, especially when the data to be processed were not large, as micro-computers were designed for non-programmers.

Production of reports (Agenda item 8)

62. The secretariat introduced document ECA/STAT/WGHS/87/6 and mentioned that micro-computers can be used to create texts of reports and this can be done through the use of appropriate word processing software packages such as "Wordstar", "Word perfect", etc. The traditional method of typing texts on stencils for reproduction may create problems and also lead to poor quality of output.

63. Word processing was described to be good for reports produced periodically (e.g., annually or bi-annually, etc.). In such a case a few pages of text will usually be repeated each year or half year and the data may simply need to be extended to one half year or year.

64. With respect to graphics, it was mentioned that in some statistical offices these graphics are produced by cartographers or draughtsmen. These days graphic packages exist which can be used to do the same job. More sophisticated graphic packages allow for free hand drawing. In terms of production of tables for the reports, the use of the SPSS package or CENTS 4 package was mentioned and has been found useful in many statistical offices.

65. The combination of graphics and text was mentioned. The new desktop publishing software (like Xerox Ventura Publisher or Adobes page maker) gives the user control over text and graphics compositions. It was mentioned that an easier way of transfering data is to make use of the 8" floppy discs since this media is available on mainframes and mini-computers. This gives the freedom to transfer data from main frame to micro if there is no direct link of the computers.

66. On the hardware requirements for the production of reports, mention was made of the need for a printer and a plotter (for graphics). For better quality reports there is need for a matrix printer with 24 needles. The better choice still is a laser printer. The HP laser jet or laser jet II might provide all what may be needed.

67. The secretariat made proposals regarding the hardware/software needed for the production of reports. These proposals covered good quality reports, better quality reports and highest quality reports. An indication of the amount which might have to be spent for the hardware/software to produce the type of report needed was provided.

68. The methods of report production were described and covered the separate use of software, combined use of software (tables and graphics), use of integrated software and desktop publishing. An example of a report created with a micro-computer available in the annex to the document was decribed to the participants.

69. In the discussion of problems related to the production of reports in the participating countries, it was mentioned that stencils continued to be used in some of the countries for the production of reports, the stencil cutter was found to be particularly helpful in one country.

70. In the preparation of the statistical tables for reports, some of the countries used the SPSS package and others used the Lotus 1.2.3 package to prepare tables nicely for the reports. In one country the camera ready tables were produced on the mainframe computer but some tables had to be retyped on stencil for reproduction.

71. Some of the countries have used micro-computers to produce reports using the Wordstar or Word perfect packages. The reports are usually sent to the government printer of the country for printing either in camera ready form or to be type-set for printing.

72. Whereas in a number of countries graphics are not produced using main frame or micro-computers, the use of a graphic plotter was mentioned by some countries including the use of the chart master to produce graphics.

73. Other problems in the use of micro-computers for the production of reports were that in one country the computers existed but were not functional due to mechanical faults and the country had to order new machines. Another problem related to the availability of the Arabic language versions of the software packages. It was mentioned that progress had been made in this direction in that there now exist word processing packages and also the laser printer in the Arabic language.

74. With regard to the time required to produce reports, the countries provided their individual experiences. Overall the time period ranged from 6 weeks to 3 years. In one country the vetting of the reports caused delays.

75. Problems of availability of the right type of paper, priority given to the jobs at the government printer in relation to other jobs were mentioned by some countries. In one country crop forecasting reports were printed particularly fast because they had to meet the deadline of a crop forecasting committee meeting of the government.

76. Because of delays in the production of reports, other countries have used the idea of a preliminary report to speed up the release of the data to the users although such reports are usually limited and do not contain detailed data.

77. Other problems which were mentioned to have contributed to the delay in the production of reports were lack of proper understanding of the software packages which had been installed (and hence the need to ensure properly trained personnel), the difficulties of equipment maintenance and lack of spare parts for the equipment in some of the countries. Another problem which was also mentioned was the lack of compatibility of the main frame and the micro-computer which can delay the production of reports. It was mentioned that by some participants that the speed of producing reports depended on the volume of the reports and the number of staff allocated to the task.

Evaluation of the working group (Agenda item 9)

78. In order to help ECA to plan future meetings more effectively, the participants were requested to fill an evaluation questionnaire at the end of the meeting. A summary of the results is given hereafter:

79. Regarding the organizational matters, all the participants, except one, indicated that the invitation to the Working Group was received sufficiently in advance. Most of the participants (70 per cent) were of the view that the duration of the meeting was inadequate. Some participants suggested that two weeks would have been more appropriate. About half of the participants considered that the daily working hours were demanding but bearable and the other half stated that these were just right. Most of the participants rated the overall administrative arrangements for the meeting (including availability of furniture, equipment and other aids and local transportation facilities) as very good or good. Only two participants rated the transportation facilities as fair or poor.

80. Concerning the content of the programme for the meeting, most of the participants were of the opinion that the topics for discussion were very relevant and that the introduction to these topics were clear throughout. Two participants indicated that the discussions were theoretically oriented but without any explanations. All the other participants felt that the discussions were practically oriented, or both practically and theoretically oriented. One participant stated that he would have liked the data management issue to be included in the agenda of the meeting. Most of the participants considered that the practical work enabled them to have a clearer understanding of the possibilities offered by the software packages presented while two of them had the opposite view on the ground that some software packages such as RODE/PC, CENTS 4 and CONCOR were discussed without any practical demonstrations. Some participants indicated that they would have also liked other software packages such as MULTIMATE and SPSS to be taught at the meeting.

81. In respect of the documentation, all the participants were of the opinion that it was sufficient and clear.

82. While most of the participants were satisfied with the time allowed for questions and discussions, the majority of them felt that the time allocated to practical work on micro-computers was not sufficient.

83. Considering that the main objective of the working group was to contribute to solving problems encountered at the survey data processing stage and therefore to develop and to strengthen the AHSCP programme, the majority of the participants considered that this objective has only been partially achieved because of time constraint which did not allow more practical work to be done. However, all the participants indicated that the items discussed at the working group were relevant to future activities in the field of the organization and conduct of household surveys in their countries.

84. The participants identified the following as the greatest problems in putting into practice any of the proposals made at the meeting:

(a) Data processing personnel

- Lack of trained manpower
- High turnover of staff
- Budget limitations which prevented national statistical offices from employing more staff

(b) Hardware

- Lack of computer equipment
- Obsolete equipment available
- Lack of disc space
- Available hardware may not support the software packages presented

(c) Software

- Lack of appropriate software packages due to financial problems

(d) Data processing management

- Need for improved management of available resources
- Need for training of DP managers
- Government priority
- Problem of co-ordination of activities

(e) Other topics

- Timeliness of production of survey results

85. The participants were invited to make any suggestions for the improvement of the organization and conduct of future meetings of this kind. A number of participants suggested that the detailed schedule of items to be covered should be sent to them in advance to enable adequate preparation. Some participants were of the view that the packages discussed should not be limited to micros only as some of the national statistical services are main frame users.

86. Finally, the participants considered that the meeting had generated sufficient interest in the use of micro-computers, particularly for survey data processing. They suggested that more examples from the participating countries should be used in future meetings. It was also proposed that participants who have got the necessary experience in the use of specific software packages should be used as resource persons.

Other business (Agenda item 10)

87. Under this agenda item, the secretariat informed the participants about the possibility of getting ECA assistance in the field of household surveys. It was stated that three specialists are available to provide assistance to countries of the region in this area, within the framework of the African Household Survey Capability Programme (AHSCP). These comprise one survey specialist financed by UNDP under an integrated project entitled "Statistical Development Programme for Africa" (SDPA), one regional adviser in household surveys provided by the International Labour Office (ILO) and attached to the regional team of AHSCP, and one data processing specialist under a bilateral co-operation arrangement with the Government of the Federal Republic of Germany.

88. The secretariat also indicated that another regional team, financed by the United Nations Fund for Population Activities (UNFPA) is available to undertake advisory services in the areas of population censuses, demographic surveys, and civil registration and vital statistics projects. As regards particularly the demographic surveys, the services of two regional advisers in demographic statistics, two regional advisers in census/survey cartography and one regional adviser in data processing could be made available on request.

89. The participants were also informed about the existence of the Central Co-ordinating Unit of the National Household Survey Capability Programme (NHSCP) within the United Nations Statistical Office in New York.

90. A suggestion was also made by the participants, under this agenda item, that ECA should propose to African Governments the list of departments or offices which should be involved in training workshops to be organized at the national level under the Inter-censal Training Programme for Sub-Saharan Africa, financed by the Canadian Government through UNFPA, or any other statistical programmes established for the region.

I. Introduction

1. The problems of food production and security have been discussed in many forums in Africa and elsewhere. At the Twenty-first Ordinary Session of the assembly of Heads of State and Government of the Organization of African Unity (OAU), 18-20 July 1985 Africa's Priority Programme for Economic Recovery 1986-1990 (APPER) was adopted. The APPER lays considerable emphasis on the food and agriculture sector (OAU) (1985). With respect to the development of agriculture, immediate and medium term measures to combat food emergencies have been suggested. The immediate measures include: creating and sustaining national emergency preparedness; instituting effective early warning systems; establishing flexible and efficient regional networks of crop protection agencies; and establishing national food security arrangements. Some of the medium term measures which have been suggested include: increase in food production; improving and expanding storage capacity, distribution and the marketing system; and improvement of the distribution of agricultural products. All these suggested measures will contribute to the strengthening of food security information systems in African countries.

2. On 1 June 1986, the United Nations General Assembly adopted a programme of Action for African Economic Recovery and Development, 1986-1990 (UNPAAERD). The programme has essentially two elements namely the determination and commitment of the African countries to launch national and regional programmes of economic development as contained in the APPER which was adopted by the African Heads of State and Government in July 1985 and the response and commitment of the international community to complement and give support to the African development efforts (UN 1986).

3. The recent drought - induced emergency situation of 1983-1985 which was experienced in Africa needs to be mentioned here. This caused some African countries to rely heavily on food aid programmes from the international community. The food security programme of the majority of the African countries are not strong enough to sustain the drought and desertification effects. It is in this context that Africa has to address the issue of food security and the supply of food to its broad masses taking into account all the factors prevailing on the continent.

II. Food security

4. The problem of chronic food insecurity in the developing countries is essentially one of inadequate food supply and this is caused by the inability of countries to produce enough food to feed their citizens. Therefore any discussion on food problems tends to emphasize the increase in food production particularly in the developing countries where this is most needed (FAO, 1984).

5. In other discussions, the food security problem has been described as a food distribution problem (FAO, 1979). In simple terms food security means being able to produce enough food for all population groups in the country or having enough money to buy provisions in the market to feed the population. The problem of food security is primarily a problem of low income people. This is because the poor tend to spend a large percentage of their income on food.

6. Measures have been suggested to provide a practical foundation for solving the food security problem. The suggested measures are: a better distribution of available food supply and a steady increase in food production especially in developing countries in order to give them a greater degree of self reliance and to meet the needs of their growing population. Specific measures which have been suggested are (FAO, 1979):

- Provision for food reserves at community and national level;
- More rational use of the soil, water and other natural resources;
- Reform of land-tenure systems for more productive land use;
- Wide diffusion of techniques to reduce the amount of food lost between the field and table; and
- An information system to give warnings of ups and downs in weather, harvest stocks and other factors likely to affect food supply.

New measures suggested by FAO are (FAO, 1979):

- assisting developing countries in the establishment of their own national food stocks; and
- tackling post-harvest losses and storage at farm and village level.

In short, the solution of the current food security problems depends on two main actions, a rapid increase in food production and a more equitable access to food supplies.

7. In summary the food problems of the countries of Africa can be reduced to four sub-problems namely:

- The necessity to reduce the rate of population growth (in most African countries population growth exceeds food production);
- An increase in food production;
- An improvement in food storage and distribution (transportation systems); and
- Maintenance of grain stocks sufficient to make up the shortfalls caused by disturbance in production.

III. Food Security Information Systems

8. As mentioned earlier the issue of food security is one of inadequate food supply. In order to discuss the information system of the food supply, we need to address the three important components of the system which are food production, food distribution and food consumption. Data on food production constitute the core of the system. In such a system the gathering of statistics for supply to the decision makers becomes an important matter. Data needs for food security have provided the general framework for the co-ordination of statistical work of FAO, with other agencies in the field of household surveys (FAO, 1983).

9. We shall discuss the situation regarding the food supply information systems under the following headings: Food production, food distribution, food consumption and institutional framework and linkages. Our discussion will mainly focuss on the situation in Africa (Commonwealth Secretariat (1986), ECA (1986)and FAO (1983)).

a) Food production

10. Statistics on food production are gathered in most of the African countries. The main sources of the data are agriculture censuses and surveys, agro-economic sample surveys and other miscellaneous sources such as administrative reports and/or records, cadastral registers, reports from agricultural extension workers, aerial photographs, producers declarations, etc.

11. In general, most African countries have conducted decennial agricultural sample censuses as opposed to full agricultural censuses and the holding has been used as the statistical unit for the collection of the data. In some of the African countries, the censuses have been conducted by the ministry responsible for agriculture in collaboration with the central statistical agency or vice versa.

12. It should be recalled that an agricultural census is a large scale operation for the collection and derivation of quantitative information about the nation's agriculture. It provides basic data relating mainly to the organisation and structure of agriculture and to the use of agricultural resources such as manpower, land, livestock, machinery, etc. An agricultural census also provide a sampling frame for future agricultural surveys. The following types of information are usually obtained in agricultural censuses:

- Facts on agriculture land area, harvest, irrigation and numbers and kinds of livestock;

- Current estimates of crop areas and production and of livestock numbers and products;

- Data on the structure of the agricultural sector and its changes such as by size distribution of holdings, extent of various forms of land tenure, etc.; and

- Basic data regarding current use and changes in use of agricultural resources, such as manpower, land, etc.

13. African countries have faced problems in carrying out censuses. The major problems have been shortage of financial resources which have sometimes led to the postponement of the scheduled activities, shortage of skilled manpower to conduct the censuses and lack of physical resources such as vehicles and equipment, tapes, compases, etc. needed for the censuses.

14. In the area of agricultural sample surveys, most countries have now established annual surveys of agriculture with the purpose of obtaining data annually on a number of agriculture subjects including crop and livestock production statistics.

15. Two principal parameters, crop area and yield together, provide estimates of food production.

Area statistics

16. Most African countries estimate area statistics using objective techniques. There are however some African countries which continue to use subjective methods like eye estimation techniques or a combination of objective and subjective methods.

17. The following problems have been experienced by African countries in estimating crop areas:

- inadequate supply of measuring instruments - compases, tapes, etc.;
- the concept of a holding is difficult to implement given the unconsolidated nature of land in some African countries and the use of shifting cultivation practices in others;
- most countries still use household based sample frames as opposed to area frames to be able to obtain areas of holdings. These frames have been constructed from population census data. The lack of cadastral survey maps has led to this approach. Cadastral survey maps in general facilitate the collection of area statistics;
- the Central Statistical Agency or ministry responsible for agriculture usually deploy their own personnel to do crop area measurements. There is need to rationalise this system and to examine the possibility of pooling together all data collection personnel from all ministries and departments;
- measurement of crops under mixed croping, relay croping and continuous cropping have been found difficult. This is largely due to lack of accepted standards for measurement of area under these situation in most African countries.

17. In the African countries where objective techniques of area measurments have been used, several methods have been adopted. These are methods of triangulation, tape and compass, etc. In the case of mixed cropping some countries have used the seed densities method for estimating area under crops.

Yield statistics

18. Most African countries carry out objective methods of crop cutting surveys to obtain yield of crops. This is usually done in randomly selected villages and fields, some countries are still using subjective methods for yield estimation.

19. The shapes of plots used for crop cutting surveys in African countries are square, circular or rectangular. Measurement of yield of crops such as cassava, yams, potatoes have caused problems since they are in general harvested gradually by households in a piecemeal fashion and not necessarily completely during any given period of the year. The planting of the crops also tends to be scattered throughout the year.

20. Problems of moisture content have been experienced by most African countries in measuring the yield of crops. These have been solved either through proper drying until the weight of the produce is constant or by the use of instruments which measure the moisture of harvested crops and adjusting the weight of the produce thereafter.

21. African countries have used permanent or temporary staff employed by the organization conducting the survey to harvest the yield of crops. Use of other functionaries such as extension workers from the Ministry of Agriculture or other departments which do not belong to the organization conducting the survey have been lacking in the majority of the African countries. This may be due to inadequate institutional framework and linkages.

22. Most African countries have instituted early warning/crop forecasting systems. Institutional arrangements for this vary from country to country. In some countries the central statistical agency is responsible for co-ordinating the forecasts while in other countries the ministry of agriculture is responsible for co-ordinating the forecasts. In either case, a committee or committees responsible for building up the forecasts have been established in each country. It should be mentioned that these forecasts have been produced to enable planning for food procurement, storage, marketing and import/export, etc. to be undertaken. Such forecasts have also proved useful in building up national accounts forecasts for the agriculture sector of the countries.

b) Food distribution

23. One of the problems of food security in Africa is that of food distribution. Proper distribution of food depends on a number of factors some of which are as follows:

i) Availability of reliable transport facilities such as vehicles, etc.;

ii) Storage facilities at community, regional and national levels; and

iii) Prices of produce including price subsidies for major food crops.

24. In an attempt to solve food security problems in developing countries, the Food and Agriculture Organization (FAO) of the United Nations (FAO, 1979) has suggested two schemes: The first scheme is that of assisting them in the establishment of their own national food stocks and another programme is that of tackling post-harvest losses and storage at farm and village level. At the international level a range of measures have been suggested including the establishment of internationally co-ordinated food stockpiles, establishment of a global information system which would alert the world community to imminent food supply problems in particular countries or regions of the world, etc.

25. It should be mentioned that some of the African countries have established state corporation for the procurement, storage and distribution of food and the export of food crops out of the countries. These corporations have tended to face a number of problems such as lack of funds to buy produce in cash and limited and inadequate storage facilities at the regional and national level, lack of back-up support in terms of vehicles, managerial skills, etc.; and prices of produce which are fixed without recourse to data on input costs.

26. Statistics on storage, procurement and distribution of food exist in some of the African countries. These statistics assist these countries in making proper decisions regarding the distribution, procurement and storage of food. In other countries such statistics are lacking, usually due to lack of institutional co-ordination or record keeping and as such policies on food procurement, storage and distribution including pricing of food have been made without the necessary supporting statistics.

c) Food consumption

27. Once food has been produced and distributed it must be consumed by individuals in the households. There is therefore need to know the types of food consumed by the households and the quantities consumed or values of the food consumed to enable proper planning for procurement and storage of the right type of food at the local, regional and national levels to be done.

28. Statistics on food consumption are usually not only needed to establish the food requirements of a country but they are also needed for determining food policies and determination of future projections of food requirements.

29. Statistics on food consumption have been collected in some of the African countries as part of the household budget surveys. Most of the African countries have not conducted food consumption surveys. In African countries where the African Household Survey Capability Programme (AHSCP) has been established, there are plans to conduct food consumption surveys as one of the modules. It should be mentioned that nutrition surveys generally sponsored by the United Nations Children Fund (UNICEF) have been conducted in many African countries with the purpose of securing alternate proxy indicators on the health status of the population particularly those under the age of five.

d) Institutional Framework and Linkages

30. In many African countries many agencies separately collect statistics on food. The institutional linkages are either lacking or weak and in those countries where linkages exist they certainly need strengthening.

31. Issues of co-ordination among data producing agencies as well as collaboration between producers and users of statistical data continue to be addressed in most of the African countries. Through inter-ministerial technical committees, co-ordination of rural development and its data requirements are usually discussed. Some countries have been able to organize monthly or quarterly meeting in the ministry of agriculture for the purpose of discussing issues relating to data collection, processing, analysis and dissemination.

IV. Food Secuirty Information Systems in Selected Countries

32. In this section of the paper examples of food security information systems in India, Kenya and Ethiopia will be provided. In India the food security system is well established while in Kenya and Ethipia the systems continue to be developed.

33. A comprehensive and well organized system of collecting statistics on food supply has been established in India. The data which are collected for the system range from those of production to those of consumption. Several agencies are involved in the food supply information system including ministries, departments and institutions. The linkages between these agencies are complementary and non-overlapping.

34. It should be mentioned that in India agriculture is a state matter, the collection and dissemination of agricultural statistics is the primary responsibility of state governments hence estimates of production of food are made by states and Union Territories on the basis of area and yield estimastion surveys conducted on a random sampling basis. The state and Union Territories have a public distribution system for food grains and sugar. The Food Corporation of India is responsible for the maintenance of the public distribution system and the maintenance of the national buffer stock. A schematic presentation of the Food Supply Information System in India is given in the Annex of this paper.

35. In Kenya, the Central Bureau of Statistics (CBS) runs a national food system in collaboration with a number of other government agencies. The CBS has received assistance from the Food Studies Group of Oxford, United Kingdom in the implementation of the national food system.

36. In Ethiopia the Relief and Rehabiliation Commission in colalboration with other government agencies has been monitoring the performance of the crops through the Food and Nutrition Surveillance Programme. Reports on the performance of crops and on the food supply situation are issued regularly. This programme helps to identify areas expecting food shortage and those expecting surplus production ahead of time. An early warning system through which reports are produced covering data on rainfall, crops and livestock condition and price of grains has been established. Reports on crop prospects, food supply status and forecast are issued regularly.

37. In Ethiopia there also exists a market dependent Food Supply System which covers the market dependent population of the nomadic, urban and cash crop producing rural population. It became necessary to establish this system because these people depend entirely on the market for their food supply. Information on the prices of food in the markets and the supply of food has provided good indicator on the food supply status of the market dependent population.

V. Improvement of Food Security Information Systems

38. As mentioned earlier in order to improve food security information systems, there is need to ensure that relevant data required for the system are available. The data required include information on food production, food distribution and food consumption. In addition there is need to strengthen the institutional framework and linkages for the collection, processing and dissemination of data.

39. In the area of agricultural censuses and surveys, these should be considered by the countries as an integral part of their statistical work. For the countries which conduct these censuses/surveys on a regular basis, questions of coverage and the quality of data need to be addressed. For countries which do not conduct these censuses/surveys on a regular basis there is need to include these censuses/surveys in their statistical programmes. In particular, agricultural censuses need to be reinforced by a programme of annual sample surveys.

40. Specific surveys should also be conducted by countries in order to strengthen the system. These surveys should be conducted in the areas of food consumption, livestock, farm practies and cost of cultivation. There may be need to conduct livestock censuses in order to strengthen the information obtained through the survey approach.

41. There is need to further strengthen crop forecasting and early warning information systems which many countries have established. In particular crop yield forecasts need to be compared with the results obtained through censuses and surveys in order to determine whether the forecasts were nearer or far from the results estimated through the conventional approach.

42. With respect to institutional framework and linkages, there is need to institute in each country effective co-operation and co-ordination among data collection agencies. This co-operation and co-ordination can best be promoted by the National Statistical Office of each country. The head of the statistical service has an important role to play in this regard. There are several ways of doing this either through the user/producer committees, meetings, publications or informal contacts. Perhaps one way of ensuring linkages is for the national statistical office to introduce publications which require institutions that produce the relevant data to report to it. It is through this way that the information supplied by institutions can be checked to ensure consistency with information produced by other agencies, including the national statistical office. It should be mentioned that the use of non-statistical functionaries such as extension or revenue collection staff in other government agencies of the countries needs to be strengthened. This should be in addition to the permanent or temporary staff available at the institutions. The establishment of statistical units in other government ministries/departments and where possible parastatal and private sector companies would enable the strengthening of institutional linkages in each country. The establishment of regional statistical offices in each country would also help in strengthening institutional linkages since these offices would be in a position to contact those institutions in their region much more easily.

43. Another area which needs to be looked into in order to strengthen the food security information system is that of research, experimentation and training. It should be noted that most of the methodologies used in Africa for the collection of statistics are those which have been found to work in developed and other developing countries in the world. There is therefore need to develop methodologies appropriate to African conditions. To do this there is need for some form of research and experimentation including training.

44. In order to conduct research and experimentation, appropriate institutions should be chosen to do this. In this connection there is need to ensure that such institutions also conduct training since the findings of their research and experimentation work will eventually be taught to potential workers in the field of data collection.

45. It is relevant to mention that at a commonwealth workshop (Commonwealth Secretariat (1986)) which was organised in New Delhi, India in 1986 on Food Supply Information Systems, two teaching and research institutions in English-speaking African countries were identified by the workshop as suitable institutions for conducting work on research and experimentation in the field of agricultural censuses and surveys. The institutions are the Institute of Statistics and Applied Economics (ISAE), Makerere University, Kampala, Uganda and the Department of Statistics, University of Ibadan, Nigeria. It is also relevant to mention that these two institutions are among the fifteen Statistical Training Programme for Africa (STPA) centres and are to be strengthened through the regional component of the STPA in their post-graduate training programmes.

46. Research and experimentation can focus on a number of problems which have been experienced by African countries in an attempt to obtain data required for food security information systems. Examples of such problems are sample design appropriate to the African situation, crop cutting surveys and the logistics, measurement of fields, frame construction (household versus holding), establishment of appropriate norms and conventions suitable for African conditions, appropriate storage of food crops, etc.

47. In order to benefit from institutions which have conducted such programme of research and experimentation, there is need for formal twinning/linkage of institutions. The Economic Commission for Africa could facilitate such arrangements in view of its relationship with teaching and research institutions in and outside Africa within the framework of the STPA.

48. Finally in the area of food distribution, most African countries should establish statistics on the quantities and volume of food which has been stored in the silos, etc. Statistics on the distribution of the food to regional and district centres should also be established and be kept up to date. These statistics provide useful indicators on the situation regarding the available food for the population at any one time. In addition to these statistics, there is need to gather statistics on market prices of food. These are important for decisions on price subsidies, etc.

VI. Conclusion

49. In this paper a brief description of food security problems and the measures for solving the problems has been given. The food security information system and its components has been described including the institutional framework and linkages required for the information system.

50. The food security system has three basic components namely: food production, food distribution and food consumption. The food production component constitutes the heart of the system. Two principal parameters, crop area and yield together provide estimates of food production. Regarding the institutional framework and linkages for the system, the issue of co-ordination among data producing agencies as well as collaboration between producers and users of statistical data have been discussed.

51. Examples of food security information systems in India, Kenya and Ethiopia have been provided in the paper.

52. Suggestions have been made for improving food security information systems at the country level. The collection of data through agricultural censuses including censuses of livestock and annual surveys of agriculture have been mentioned. These provide a wealth of information for the building up of the food security information systems. Specific surveys on food consumption, livestock, farm practies and cost of cultivation have been mentioned and these provide information which strengthen the system. The strengthening of crop forecasting and early warning informational systems and institution linkages has also been mentioned. The National Statistical Agency of each country has an important role to play in fostering institutional linkages.

53. The conduct of research, experimentation and training has been mentioned as one way of contributing to the improvement of data for the system. Through research, the quality of data can be improved and methodologies for collecting data can be established.

REFERENCES

1. Commonwealth Secretariat (U.K.) (1986), Report on the Commonwealth workshop on "Food Supply Information Systems in Africa, New Delhi, India, 13-25 October.

2. Economic Commission for Africa (ECA) (1986), "Food Supply Information Systems in Africa: The Relevance of the Indian Experience", Statistical Information Bulletin number 19, Statistics Division.

3. Food and Agriculture Organization (FAO) of the United Nations (1979), "The Struggle of Food Security", Rome, Italy.

4. Food and Agriculture Organization (FAO) of the United Nations (1984), "World Food Security: Selected themes and issues", Fao Economic and Social Development paper 53, Rome, Italy.

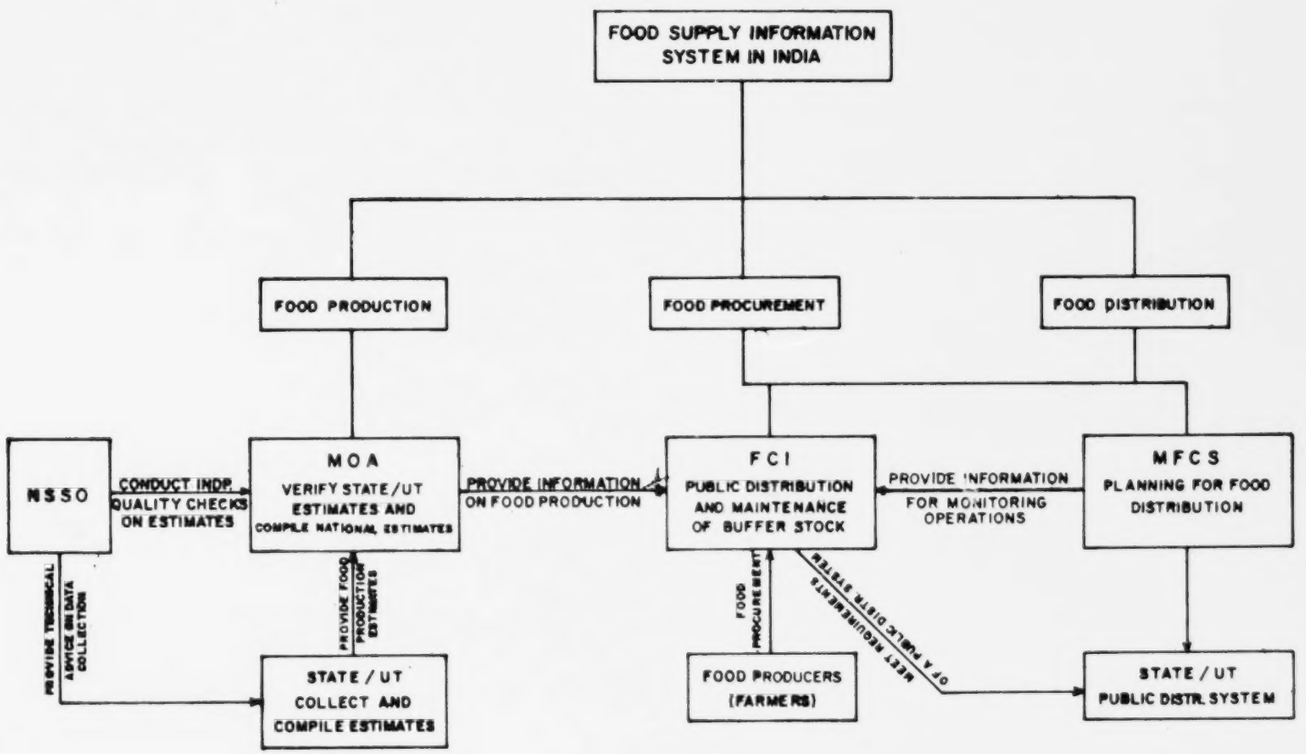
5. Food and Agriculture Organization (FAO) of the United Nations (1983) "Use of household surveys for collection of food and agricultural statistics", FAO Economic and Social Development paper 35/prov.

6. Garcia, Rolando, "Food Systems and Society: A conceptual and methodological challenge", United Nations Research Institute for Social Development (UNRISD), Geneva, 1984.

7. Organisation of African Unity (OAU) (1985)" Africa's Priority Programme for Economic Recovery (1986-1990)".

8. United Nations Department of Public Information (1986)" Africa, United Nations Programme of Action for African Economic Recovery and Development, 1986-1990.

SCHEMATIC PRESENTATION OF THE FOOD SUPPLY INFORMATION SYSTEM IN INDIA


FOOD SUPPLY INFORMATION SYSTEM IN INDIA
FOOD PRODUCTION
FOOD PROCUREMENT
FOOD DISTRIBUTION
NSSO
CONDUCT INDP. QUALITY CHECKS ON ESTIMATES
MOA
VERIFY STATE/UT ESTIMATES AND COMPILE NATIONAL ESTIMATES
PROVIDE INFORMATION ON FOOD PRODUCTION
FCI
PUBLIC DISTRIBUTION AND MAINTENANCE OF BUFFER STOCK
PROVIDE INFORMATION FOR MONITORING OPERATIONS
MFCS
PLANNING FOR FOOD DISTRIBUTION
PROVIDE TECHNICAL ADVICE ON DATA COLLECTION
PROVIDE FOOD PRODUCTION ESTIMATES
FOOD PROCUREMENT
MEET REQUIREMENTS OF A PUBLIC DISTN SYSTEM
STATE / UT COLLECT AND COMPILE ESTIMATES
FOOD PRODUCERS (FARMERS)
STATE / UT PUBLIC DISTR. SYSTEM

NSSO = National Sample Survey Organisation of India
MOA = Ministry of Agriculture
UT = Union Territories
FCI = Food Corporation of India
MFCS = Ministry of Food and Civil Supplies